Extended CV of Laszlo Hunyadi

Scientific achievements

In his work "Hungarian Sentence Prosody and Universal Grammar" he argues that scope relations between such operators as quantifiers, negation and focus can be universally resolved by sentential prosodic rules. He argues that within a prosodic phrase headed by a single major stress the constituent bearing this major stress has scope over the rest of the prosodic phrase. By way of further prosodic constraints and the stipulation of a hierarchy of wide scope operators the scope relations within multiple focus sentences and sentences with primary and secondary stress are also accounted for. This theory assumes a direct relation between PF and LF, and, accordingly, challenges the Chomskyan tripartite account for syntactic structure. Hunyadi's approach has generated considerable debate among linguists and served as a focus of workshops, papers and dissertations.

In his dissertation for the Candidate's degree (1983, PhD) Hunyadi studied the syntactic behaviour of linguistic polarity items in Hungarian, arriving at the issue of the relation between negation, focus and quantification to be accounted for within É.Kiss's then novel generative model. He observed that, from the point of view of word order and semantic properties, quantifiers behave differently from other kinds of foci, thus recommending an underlying syntactic structure different from É.Kiss's original proposal. His observations subsequently gave rise to a separate, now standard quantifier (Q) position. Also, in this work he first formulated that an operator precedes its scope and has wide scope over it, that later became a significant property of configurationality in É.Kiss's model for Hungarian syntax.

Since in Hunyadi's theory both word accent and sentence stress had their theoretical significance, he proposed a model to empirically measure and justify them. In contrast to existing models based on changes of pitch and duration, his proposal assumed an equal function of pitch and amplitude in the detection of accent/stress. By normalizing the pitch and amplitude of an utterance and calculating their difference over time he reduced the two phonetic parameters into a single one, capturing the quality and quantity of accent/stress in a more straightforward way.

In joining the debate on the faculty of language and the hypothesis that recursion is the single property of human language that makes it exclusively human (Hauser, Chomsky and Fitch 2002), Hunyadi first showed that prosody, not only syntax, is also recursive. Based on experiments with centrally embedded sentences in a number of languages he found that syntactic embedding has its prosodic correlate: the deeper the embedding, the deeper its representation by intonation.

For this phenomenon he introduced the term tonal continuity. As a result of a joint project with psychologists and neurophysiologists based on the ERP studies of the recordings of normal and pseudo-sentences they showed that prosody is a mandatory component of recursive syntactic parsing, thus confirming the independence of prosody. He participated in further projects with psychologists and neurophysiologists to study brain function connectivity in speech processes in multi-speaker environment.

Inspired by theoretical considerations, Hunyadi has been a proponent of experimental linguistics already early on. He established a cognitive laboratory at his university for the study of cognitive linguistic behavior with combined measurements from an eye tracker and an EEG. The first experiments and studies focused on the issue of pronoun resolution with further tasks in the pipeline. As the next step, with a team of neurophysiologists he is planning to identify ERP patterns of more specific grammatical operations. Hunyadi has also suggested that it is our shared faculty of cognitive grouping that makes prosodic recursion and the intonation and timing of speech prosody in general possible. In more general terms he suggests that cognitive grouping appears as one of the foundations of human cognition. In collaboration with a pair of PhD-students in brain sciences for whom he also serves as their advisor, they have been working on the detection of patterns of grouping in the brain using fMRI. The first results are being prepared for submission.

For a long time, often on the sidelines of his major interests in the theory of language, Hunyadi has found intriguing the original purpose of the Masoretic notation of Biblical Hebrew, a system of signs assigned to every word of the Hebrew Bible, whose syntactic, semantic or musical functions have long been debated and appear to be still unsolved. During two fellowships at the Albright Institute of Archeological Research in Jerusalem he built a theory according to which these signs serve to represent actual speech prosody, including its melody and rhythm. He has recently built a software which, following these signs, even synthesizes this prosody behind the written text. After initial publications the latest results are expected to be submitted for publication in the near future.

The most large-scale scientific collaboration Hunyadi has been involved in is the joint EU-Hungary funded project *The theoretical foundations of human-machine communication*. Until recently, for 10 years he lead the joint efforts of theoretical and computational linguists, engineers, information scientists and psychologists from the Hungarian universities of Debrecen, Szeged and the Technical University of Budapest, the Research Institute of Linguistics, Budapest, the Research Institute of Psychology, Budapest, as well as specialists from King's College London (UK), Oulu (Finland), Bielefeld (Germany), and two Israeli universities: Hebrew University (Jerusalem) and University of Haifa. The project resulted in the first multimodal corpus of Hungarian based on an extensive annotation

scheme. The corpus of about 50 hours of both free and guided dialogues, comprised of the annotation of verbal and nonverbal behavior. As for the verbal content, it includes a rich syntactic, morphological, phonetic and prosodic analysis, an indispensable pool of data for researchers of the spoken language. As for the nonverbal content, body gestures (head, face, eyes, hand, posture) are captured, as well as a number of emotional and pragmatic features of the given behavior. Since the project became part of the international network MASI (Methods for the Analysis of Social Interactions), the corpus has been studied using an innovative statistical environment THEME especially designed for such purposes. Hunyadi serves as the driving force to make THEME run in parallel processing. Hunyadi and his team have been analyzing the corpus and discovering hidden patterns of behavior using the cloud service of the Hungarian Academy of Sciences.

For more than two decades Hunyadi has been an active member of the international Digital Humanities (DH) community. In 1998 he organized in Debrecen the joint conference of the two associations, the European ALLC (Association for Literary and Linguistic Computing) and the North-American ACH (Association for Computing in the Humanities), along with the first national DH conference. From this year on he became member of the Steering Committee of ALLC and served it in several functions. He was the program chair of the Gothenburg ALLC-ACH conference in 2004, and member of the program committee at the ACH-ALLC conference in Charlottesville, Virginia (1999). He also represented ALLC at the Workshop on Indic Languages in Kolkatta as co-organiser. From 1998 to 2010 he also served on the editorial board of Literary and Linguistic Computing (OUP). He initiated a virtual seminar series for MA students of computational linguistics and digital humanities across Europe well ahead of time. The series Culture and Technology involved the universities of Debrecen, Oulu, London and Leipzig, (2007-2009). This beginning finally bore its fruits in the form of the European Summer University – Culture and Technology, the host being the University of Leipzig, starting from 2009. Hunyadi taught there international students for several years and gave guest lectures as well. Following international examples, Hunyadi started the first MA in Digital Humanities program in Hungary in 2011 opening new study and employment opportunities for students with interdisciplinary orientation. It also offered important new tracks for studies in computational linguistics as well.

Through the years 1991-1998 Hunyadi was also the project manager of the World Bank supported program FEFA for the development of Hungarian higher education at the University of Debrecen. It was under his management that internet was introduced in the university and educational infrastructure was largely developed. Teaching staff of all foreign language departments were given the opportunity to travel to conferences abroad or enroll in PhD studies at several European

universities. As a result, important new, long lasting and fruitful academic contacts were established. As an important outcome of the project, new foreign language departments were established and the first MA in Applied Linguistics in the country was also started.

Hunyadi's work has its interdisciplinary and international dimensions. Several of his research questions require the collaboration with specialists in different disciplines, such as psychology, cognitive science, IT, statistics and engineering. The projects he has headed or taken part of have predominantly been also interdisciplinary. In 2014 he was invited by the Hebrew University in Jerusalem to participate in and eventually direct a future interdisciplinary center. Even though the establishment of the center finally did not materialize, he still maintains research contacts with several colleagues there.

Due to the special position of his department at the university, Hunyadi has had a smaller than average number of students enrolled in his department with the number of PhD-students graduating being even smaller. Even if some of them defended their dissertation elsewhere, the semanticians Beáta Gyuris and Enikő Tóth, as well as the mathematician Mária Csernoch started their scientific carrier under his supervision. His best PhD-student is the computational linguist and philosopher István Szekrényes with whom they have a number of joint publications as well.

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